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## NOTICE OF ALLOWANCE AND FEE(S) DUE

7590 09/18/2009

Siemens Corporation  
Intellectual Property Department  
170 Wood Avenue South  
Iselin, NJ 08830

EXAMINER

YOUNG, NATASHA E

ART UNIT

PAPER NUMBER

1797

DATE MAILED: 09/18/2009

APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
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10/797,455

03/10/2004

Mary Ann Alvin

2004P02559US

4433

TITLE OF INVENTION: TWO STAGE CATALYTIC COMBUSTOR

APPLN. TYPE	SMALL ENTITY	ISSUE FEE DUE	PUBLICATION FEE DUE	PREV. PAID ISSUE FEE	TOTAL FEE(S) DUE	DATE DUE
nonprovisional	NO	\$1510	\$300	\$0	\$1810	12/18/2009

**THE APPLICATION IDENTIFIED ABOVE HAS BEEN EXAMINED AND IS ALLOWED FOR ISSUANCE AS A PATENT. PROSECUTION ON THE MERITS IS CLOSED. THIS NOTICE OF ALLOWANCE IS NOT A GRANT OF PATENT RIGHTS. THIS APPLICATION IS SUBJECT TO WITHDRAWAL FROM ISSUE AT THE INITIATIVE OF THE OFFICE OR UPON PETITION BY THE APPLICANT. SEE 37 CFR 1.313 AND MPEP 1308.**

**THE ISSUE FEE AND PUBLICATION FEE (IF REQUIRED) MUST BE PAID WITHIN THREE MONTHS FROM THE MAILING DATE OF THIS NOTICE OR THIS APPLICATION SHALL BE REGARDED AS ABANDONED. THIS STATUTORY PERIOD CANNOT BE EXTENDED. SEE 35 U.S.C. 151. THE ISSUE FEE DUE INDICATED ABOVE DOES NOT REFLECT A CREDIT FOR ANY PREVIOUSLY PAID ISSUE FEE IN THIS APPLICATION. IF AN ISSUE FEE HAS PREVIOUSLY BEEN PAID IN THIS APPLICATION (AS SHOWN ABOVE), THE RETURN OF PART B OF THIS FORM WILL BE CONSIDERED A REQUEST TO REAPPLY THE PREVIOUSLY PAID ISSUE FEE TOWARD THE ISSUE FEE NOW DUE.**

### HOW TO REPLY TO THIS NOTICE:

#### I. Review the SMALL ENTITY status shown above.

If the SMALL ENTITY is shown as YES, verify your current SMALL ENTITY status:

A. If the status is the same, pay the TOTAL FEE(S) DUE shown above.

B. If the status above is to be removed, check box 5b on Part B - Fee(s) Transmittal and pay the PUBLICATION FEE (if required) and twice the amount of the ISSUE FEE shown above, or

If the SMALL ENTITY is shown as NO:

A. Pay TOTAL FEE(S) DUE shown above, or

B. If applicant claimed SMALL ENTITY status before, or is now claiming SMALL ENTITY status, check box 5a on Part B - Fee(s) Transmittal and pay the PUBLICATION FEE (if required) and 1/2 the ISSUE FEE shown above.

II. PART B - FEE(S) TRANSMITTAL, or its equivalent, must be completed and returned to the United States Patent and Trademark Office (USPTO) with your ISSUE FEE and PUBLICATION FEE (if required). If you are charging the fee(s) to your deposit account, section "4b" of Part B - Fee(s) Transmittal should be completed and an extra copy of the form should be submitted. If an equivalent of Part B is filed, a request to reapply a previously paid issue fee must be clearly made, and delays in processing may occur due to the difficulty in recognizing the paper as an equivalent of Part B.

III. All communications regarding this application must give the application number. Please direct all communications prior to issuance to Mail Stop ISSUE FEE unless advised to the contrary.

**IMPORTANT REMINDER: Utility patents issuing on applications filed on or after Dec. 12, 1980 may require payment of maintenance fees. It is patentee's responsibility to ensure timely payment of maintenance fees when due.**

# **PART B - FEE(S) TRANSMITTAL**

**Complete and send this form, together with applicable fee(s), to: Mail Mail Stop ISSUE FEE  
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INSTRUCTIONS: This form should be used for transmitting the ISSUE FEE and PUBLICATION FEE (if required). Blocks 1 through 5 should be completed where appropriate. All further correspondence including the Patent, advance orders and notification of maintenance fees will be mailed to the current correspondence address as indicated unless corrected below or directed otherwise in Block 1, by (a) specifying a new correspondence address; and/or (b) indicating a separate "FEE ADDRESS" for maintenance fee notifications.

CURRENT CORRESPONDENCE ADDRESS (Note: Use Block 1 for any change of address)

Note: A certificate of mailing can only be used for domestic mailings of the Fee(s) Transmittal. This certificate cannot be used for any other accompanying papers. Each additional paper, such as an assignment or formal drawing, must have its own certificate of mailing or transmission.

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Iselin, NJ 08830

## **Certificate of Mailing or Transmission**

I hereby certify that this Fee(s) Transmittal is being deposited with the United States Postal Service with sufficient postage for first class mail in an envelope addressed to the Mail Stop ISSUE FEE address above, or being facsimile transmitted to the USPTO (571) 273-2885, on the date indicated below.

(Depositor's name)
(Signature)
(Date)

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EXAMINER	ART UNIT	CLASS-SUBCLASS
YOUNG, NATASHA E	1797	422-177000

1. Change of correspondence address or indication of "Fee Address" (37 CFR 1.363).

☐ Change of correspondence address (or Change of Correspondence Address form PTO/SB/122) attached.

☐ "Fee Address" indication (or "Fee Address" Indication form PTO/SB/47; Rev 03-02 or more recent) attached. **Use of a Customer Number is required.**

2. For printing on the patent front page, list

(1) the names of up to 3 registered patent attorneys or agents OR, alternatively, 1 \_\_\_\_\_

(2) the name of a single firm (having as a member a registered attorney or agent) and the names of up to 2 registered patent attorneys or agents. If no name is listed, no name will be printed. 2 \_\_\_\_\_

3 \_\_\_\_\_

3. ASSIGNEE NAME AND RESIDENCE DATA TO BE PRINTED ON THE PATENT (print or type)

PLEASE NOTE: Unless an assignee is identified below, no assignee data will appear on the patent. If an assignee is identified below, the document has been filed for recordation as set forth in 37 CFR 3.11. Completion of this form is NOT a substitute for filing an assignment.

(A) NAME OF ASSIGNEE

(B) RESIDENCE: (CITY and STATE OR COUNTRY)

Please check the appropriate assignee category or categories (will not be printed on the patent) : ☐ Individual ☐ Corporation or other private group entity ☐ Government

4a. The following fee(s) are submitted:

- ☐ Issue Fee  
☐ Publication Fee (No small entity discount permitted)  
☐ Advance Order - # of Copies \_\_\_\_\_

4b. Payment of Fee(s); (Please first reapply any previously paid issue fee shown above)

- ☐ A check is enclosed.  
☐ Payment by credit card. Form PTO-2038 is attached.  
☐ The Director is hereby authorized to charge the required fee(s), any deficiency, or credit any overpayment, to Deposit Account Number \_\_\_\_\_ (enclose an extra copy of this form).

5. Change in Entity Status (from status indicated above)

- ☐ a. Applicant claims SMALL ENTITY status. See 37 CFR 1.27. ☐ b. Applicant is no longer claiming SMALL ENTITY status. See 37 CFR 1.27(g)(2).

NOTE: The Issue Fee and Publication Fee (if required) will not be accepted from anyone other than the applicant; a registered attorney or agent; or the assignee or other party in interest as shown by the records of the United States Patent and Trademark Office.

Authorized Signature \_\_\_\_\_

Date \_\_\_\_\_

Typed or printed name \_\_\_\_\_

Registration No. \_\_\_\_\_

This collection of information is required by 37 CFR 1.311. The information is required to obtain or retain a benefit by the public which is to file (and by the USPTO to process) an application. Confidentiality is governed by 35 U.S.C. 122 and 37 CFR 1.14. This collection is estimated to take 12 minutes to complete, including gathering, preparing, and submitting the completed application form to the USPTO. Time will vary depending upon the individual case. Any comments on the amount of time you require to complete this form and/or suggestions for reducing this burden, should be sent to the Chief Information Officer, U.S. Patent and Trademark Office, U.S. Department of Commerce, P.O. Box 1450, Alexandria, Virginia 22313-1450. DO NOT SEND FEES OR COMPLETED FORMS TO THIS ADDRESS. SEND TO: Commissioner for Patents, P.O. Box 1450, Alexandria, Virginia 22313-1450.

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DATE MAILED: 09/18/2009

## Determination of Patent Term Adjustment under 35 U.S.C. 154 (b) (application filed on or after May 29, 2000)

The Patent Term Adjustment to date is 720 day(s). If the issue fee is paid on the date that is three months after the mailing date of this notice and the patent issues on the Tuesday before the date that is 28 weeks (six and a half months) after the mailing date of this notice, the Patent Term Adjustment will be 720 day(s).

If a Continued Prosecution Application (CPA) was filed in the above-identified application, the filing date that determines Patent Term Adjustment is the filing date of the most recent CPA.

Applicant will be able to obtain more detailed information by accessing the Patent Application Information Retrieval (PAIR) WEB site (<http://pair.uspto.gov>).

Any questions regarding the Patent Term Extension or Adjustment determination should be directed to the Office of Patent Legal Administration at (571)-272-7702. Questions relating to issue and publication fee payments should be directed to the Customer Service Center of the Office of Patent Publication at 1-(888)-786-0101 or (571)-272-4200.

<b>Notice of Allowability</b>	<b>Application No.</b>	<b>Applicant(s)</b>	
	10/797,455	ALVIN ET AL.	
	<b>Examiner</b>	<b>Art Unit</b>	
	NATASHA YOUNG	1797	

**-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address--**

All claims being allowable, PROSECUTION ON THE MERITS IS (OR REMAINS) CLOSED in this application. If not included herewith (or previously mailed), a Notice of Allowance (PTOL-85) or other appropriate communication will be mailed in due course. **THIS NOTICE OF ALLOWABILITY IS NOT A GRANT OF PATENT RIGHTS.** This application is subject to withdrawal from issue at the initiative of the Office or upon petition by the applicant. See 37 CFR 1.313 and MPEP 1308.

1. ☒ This communication is responsive to remarks filed June 8, 2009.
2. ☒ The allowed claim(s) is/are 1-5,24-26,28,29,31,32,34 and 36.
3. ☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
  - a) ☐ All    b) ☐ Some\*    c) ☐ None    of the:
    1. ☐ Certified copies of the priority documents have been received.
    2. ☐ Certified copies of the priority documents have been received in Application No. \_\_\_\_.
    3. ☐ Copies of the certified copies of the priority documents have been received in this national stage application from the International Bureau (PCT Rule 17.2(a)).
  - \* Certified copies not received: \_\_\_\_.

Applicant has THREE MONTHS FROM THE "MAILING DATE" of this communication to file a reply complying with the requirements noted below. Failure to timely comply will result in ABANDONMENT of this application.

**THIS THREE-MONTH PERIOD IS NOT EXTENDABLE.**

4. ☐ A SUBSTITUTE OATH OR DECLARATION must be submitted. Note the attached EXAMINER'S AMENDMENT or NOTICE OF INFORMAL PATENT APPLICATION (PTO-152) which gives reason(s) why the oath or declaration is deficient.
5. ☐ CORRECTED DRAWINGS ( as "replacement sheets") must be submitted.
  - (a) ☐ including changes required by the Notice of Draftsperson's Patent Drawing Review ( PTO-948) attached
    - 1) ☐ hereto or 2) ☐ to Paper No./Mail Date \_\_\_\_.
  - (b) ☐ including changes required by the attached Examiner's Amendment / Comment or in the Office action of Paper No./Mail Date \_\_\_\_.

**Identifying indicia such as the application number (see 37 CFR 1.84(c)) should be written on the drawings in the front (not the back) of each sheet. Replacement sheet(s) should be labeled as such in the header according to 37 CFR 1.121(d).**
6. ☐ DEPOSIT OF and/or INFORMATION about the deposit of BIOLOGICAL MATERIAL must be submitted. Note the attached Examiner's comment regarding REQUIREMENT FOR THE DEPOSIT OF BIOLOGICAL MATERIAL.

**Attachment(s)**

- |                                                                                                                                                                                                                                                                                                                                                                                                                                                                   |                                                                                                                                                                                                                                                                                                                                                                                                                                      |
|-------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|--------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| <ol style="list-style-type: none"> <li>1. <input checked="" type="checkbox"/> Notice of References Cited (PTO-892)</li> <li>2. <input type="checkbox"/> Notice of Draftsperson's Patent Drawing Review (PTO-948)</li> <li>3. <input type="checkbox"/> Information Disclosure Statements (PTO/SB/08),<br/>Paper No./Mail Date ____</li> <li>4. <input type="checkbox"/> Examiner's Comment Regarding Requirement for Deposit<br/>of Biological Material</li> </ol> | <ol style="list-style-type: none"> <li>5. <input type="checkbox"/> Notice of Informal Patent Application</li> <li>6. <input type="checkbox"/> Interview Summary (PTO-413),<br/>Paper No./Mail Date ____.</li> <li>7. <input type="checkbox"/> Examiner's Amendment/Comment</li> <li>8. <input checked="" type="checkbox"/> Examiner's Statement of Reasons for Allowance</li> <li>9. <input type="checkbox"/> Other ____.</li> </ol> |
|-------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|--------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|

## **DETAILED ACTION**

### ***Allowable Subject Matter***

Claims 1-5, 246, 28-29, 31-32, 34, and 36 are allowed.

The closest prior art references are Polinski et al (US 4,270,896), Santala et al (US 3,953,176), Murrell et al (US 6,667,017 B2), Fay, III et al (US 6,040,266), Dalla Betta et al (US 5,183,401), Butler et al (RMRS-RP-9), Lywood et al (US 5,228,847), and Abe et al (US 5,538,697).

Regarding claim 1, Polinski et al discloses a catalyst system comprising a first catalytic stage (20) comprising a ceramic (zircon-mullite) catalyst support (see column 7, lines 20-44) and receiving an oxidizer and a fuel (see figure 1) and discharging a partially oxidized fuel/oxidizer mixture; a second catalytic stage (26) comprising a ceramic (zircon-mullite) catalyst support (see column 7, line 60 through column 8, line 7) disposed within a pressure boundary (30, wall of structure) defining a pressure boundary cross-sectional flow area, the catalyst support receiving a first portion of the mixture, and the second catalytic stage having an outlet temperature elevated sufficiently to completely oxidize without using a separate ignition source (see column 3, line 53 through column 4, line 19); a transition stage disposed between the first catalytic stage and the second catalytic stage (38a-b), the transition stage comprises a narrowed flow area region disposed between an inlet and receiving the partially oxidized fuel/oxidizer mixture from the first catalytic stage and an outlet end discharging partially oxidized fuel/oxidizer mixture into the second catalytic stage, wherein the narrowed flow

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area region of the transition stage has a narrower flow area than each of the first catalytic stage and the second catalytic stage (see figures 3a-b); and the second catalytic stage having an outlet temperature elevated sufficiently to completely oxidize without using a separate ignition source and the second catalytic stage further comprises a plurality of separate catalytic elements disposed along a flow axis of the combustor (see column 3, line 53 through column 4, line 19 and figure 2)

Santala et al discloses a catalytic converter having two stages made of corrugated metal strips (see Abstract; column 1, line 32 through column 2, line 33; and figure 7) and in an alternate embodiment the catalyst section (12b) is formed with a hollow cylindrical configuration by wrapping the paired corrugated catalyst strip material (32) around a metal tubing (58) (see column 7, line 5 through column 8, line 3 and figure 9).

Murrell et al discloses an apparatus for the catalytic oxidation of environmentally harmful compounds (see column 1, lines 7-9) having a monolith honeycomb structure (10), a corrugated structure (12), and a corrugated structure (14) combined with a monolith structure (16) (see column 11, lines 51-65 and figures 3a-c) and that it is known in the art to have catalytic converters including metal-ceramic combustors (see column 2, lines 18-29).

Fay, III et al discloses the use of reticulated ceramic foam catalyst supports (see column 3, lines 18-25 and column 4, lines 4-20) and a bypass passageway disposed around a portion of a perimeter of the ceramic reticulated foam catalytic support for

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allowing second portion of the mixture to bypass the foam catalyst support of the second catalytic stage (see figure 8 and column 8, lines 16-28).

Dalla Betta et al discloses that a homogeneous combustion zone does not need to be large since the gas residence time in the zone normally should not be more than about eleven or twelve milliseconds to achieve substantially complete combustion (see column 13, lines 21-26).

It would not have been obvious to one having ordinary skill in the art at the time the invention was made to combine the teachings of Polinski et al, Santala et al, Murrell et al, Fay, III et al, and Dalla Betta et al because the express motivation to combine is lacking.

Claims 2-5, 32, and 34 depend on claim 1.

Regarding claim 24, Polinski et al discloses catalyst system comprising: an upstream pressure boundary (20) comprising a catalytic surface disposed therein for receiving a fuel/oxidizer mixture (see figure 1) and discharging a partially oxidized fuel/oxidizer mixture; a downstream pressure boundary (26) defining a pressure boundary cross-sectional flow area for receiving the partially oxidized fuel/oxidizer mixture; a ceramic catalyst support disposed within the second pressure boundary for receiving a first portion of the mixture (see column 7, line 60 through column 8, line 7); and a transition pressure boundary (38a-b) disposed between the upstream pressure boundary and the downstream pressure boundary, the transition pressure boundary comprising a narrowed flow area region (see figure 3a-b) effective to generate a venturi effect disposed between an inlet end receiving the oxidized fuel/oxidizer mixture from

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the upstream pressure boundary and an outlet end discharging the partially oxidized fuel/oxidizer mixture into the downstream pressure boundary, wherein the transition pressure boundary is configured to substantially limit combustion of the partially oxidized fuel/oxidizer mixture from the upstream pressure boundary.

Butler et al defines the Venturi effect as the increase in velocity of a stream of gas or liquid as it passes from one area through another area of smaller size or diameter. Since Polinski et al discloses a stream of gas or liquid as it passes from one area through another area of smaller size or diameter, the transition stage to the second catalytic stage generates a Venturi effect.

Fay, III et al discloses the use of reticulated ceramic foam catalyst supports (see column 3, lines 18-25 and column 4, lines 4-20) and a bypass passageway for allowing second portion of the mixture to bypass the foam catalyst support of the second catalytic stage (see figure 8 and column 8, lines 16-28) such that the bypass passageway is disposed around a portion of an outer perimeter of the reticulated foam support and the reticulated foam support comprises a cross-section perimeter smaller than an internal perimeter of the pressure boundary.

Lywood et al discloses using a catalyst body, which provides outer annular bypass regions (see column 7, lines 25-32 and figure 3), thus providing a cross-section perimeter smaller than an internal perimeter of the pressure boundary, the foam support being supported against the internal perimeter by spaced apart standoffs (39).

Abe et al discloses a cylindrical carrier having a plurality of addition bypass passageways (18) for allowing the second portion of the fuel/oxidizer mixture to bypass



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the cylindrical carrier, wherein said plurality of additional bypass passageways comprises a plurality of spaced apart, tubular passageways extending longitudinally through the cylindrical carrier (see figures 8-10 and column 15, line 39 through column 16, line 12).

It would not have been obvious to one having ordinary skill in the art at the time the invention was made to combine the teachings of Polinski et al, Santala et al, Murrell et al, Fay, III et al, and Dalla Betta et al because the express motivation to combine is lacking.

Claims 25-26, 28-29, 31, 34, and 36 depend on claim 1.

### ***Conclusion***

Any inquiry concerning this communication or earlier communications from the examiner should be directed to NATASHA YOUNG whose telephone number is 571-270-3163. The examiner can normally be reached on Mon-Thurs 7:30 am-6:00 pm.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Walter Griffin can be reached on 571-272-1447. The fax phone number for the organization where this application or proceeding is assigned is 571-273-8300.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see <http://pair-direct.uspto.gov>. Should

Art Unit: 1797

you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free). If you would like assistance from a USPTO Customer Service Representative or access to the automated information system, call 800-786-9199 (IN USA OR CANADA) or 571-272-1000.

/N. Y./

Examiner, Art Unit 1797

/Walter D. Griffin/

Supervisory Patent Examiner, Art Unit 1797